

ON A SMALL FOSSIL MARSUPIAL WITH LARGE
GROOVED PREMOLARS.

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(Plates xxv. and xlv.)

At the Meeting of the Linnean Society on 26th June I communicated a paper "On a new fossil Marsupial allied to *Hypsi-prymnus*, but resembling in some points the *Plagiaulacidae*," in which I described two fragments of the upper and a portion of the lower jaw of a small Marsupial, under the name *Burramys parvus*, and regarded the form as being related to the Rat Kangaroo, but exhibiting apparently by a parallel development some characters of the *Plagiaulacidae*. Of this paper an abstract was published at the time. Since then I have been fortunate in discovering some more perfect specimens which throw much additional light on the structure of the form. I have therefore thought it advisable, with the permission of the Council, to withdraw the previous paper and give a more complete description in the light of the more recent finds.

The specimens I have obtained are all from a small calcareous deposit in the neighbourhood of Taralga, N.S.W. This deposit is situated on the very top of a limestone hill, and is evidently the remains of the floor of a cave, whose roof and sides have long since been weathered away. The stone is very hard and consists of a brownish lime deposit in which are imbedded innumerable small bones, with the remains of a few stalactites and an occasional calcite rhomb. The bones are mostly those of small marsupials, though I have also found the remains of at least one species of rodent and the very perfect cranium of a small bird.

Most of the marsupials belong either to extinct species or to species not now living in the district.

The subject of the present paper is one of the most interesting forms found, and as I am not aware of its having been previously observed, and as its dentition is unlike that of any known marsupial, I have formed a new genus for it, called after the aboriginal name of the district.

BURRAMYS PARVUS, gen. et sp. nov.

The form is characterised by having above and below a large grooved premolar followed by three well developed molars. In the lower jaw the large premolar has six well marked grooves on each side passing upwards and slightly backward and giving the tooth a serrated edge. As the grooves run approximately parallel to the anterior border of the tooth and to each other, and as the anterior and posterior borders converge considerably above, there is left a considerable portion of the posterior part of the tooth ungrooved. This premolar is placed obliquely in the jaw, the line of its edge passing considerably outwards from the line of the molars. The first molar bears some resemblance to the corresponding tooth in *Petaurus*, having two posterior and a large anterior cusp: it differs, however, in the anterior cusp pointing more outwards. The second molar is slightly oblong and has four well developed cusps; of these the anterior outer cusp has a small secondary one springing from it, while the posterior inner one is partly divided by a well marked furrow. The third molar is less developed and apparently quadritubercular. Behind this there appears to be a rudimentary single rooted and apparently functionless fourth molar, which is generally lost in the specimens found. In front there is a long straight flattened and pointed incisor directed considerably upwards from the axis of the jaw. Between the base of this incisor and the anterior part of the large premolar are five minute tooth sockets which have apparently been occupied by two double-rooted premolars and a single-rooted anterior tooth—possibly a minute second incisor. Behind, the jaw has a very marked inflected angle

which passes somewhat downwards. The large depression on the outer side is bounded in front by a well marked ridge, but does not communicate with the dental canal. The main portion of the jaw supporting the molars and the large premolar is very stout proportionately. In the upper jaw only the cheek teeth are at present known. There is a large premolar grooved and serrated as in the lower jaw, having six well marked grooves which run downwards and backwards. The grooves run parallel to the anterior border and leave the posterior and upper third of the tooth ungrooved. Behind the large premolar are three true molars: whether there may be a rudimentary fourth as in the lower jaw is at present unknown. The first is the largest. It has two moderately large blunt tubercles on the outer side, and two smaller ones on the inner, while a small fifth is situated at the anterior and inner corner. The upper third molar is small.

The following are some of the principal measurements:—

From 1st to 3rd upper molars	3·2 mm.
Length of 1st upper molar.....	1·3 mm.
Height of upper premolar	1·7 mm.
Length (antero-posterior) of upper premolar ...	2·0 mm.
From 1st to 3rd lower molars	3·5 mm.
Length of lower incisor	6·3 mm.
From point of lower incisor to front of premolar	8·2 mm.
Depth of lower jaw at 1st molar	3·5 mm.

Locality.—Near Taralga, N.S.W.

Geological Formation.—Pleistocene (?).

Of this form I have discovered five or six moderately good lower jaws, the anterior portion of another, and three fragments of the upper. The hard matrix and the friable nature of the bones render it very difficult to develop the more delicate specimens, and in the case of *Burramys* the difficulty is enhanced by the obliquity of the large premolar, so that it becomes almost

impossible to split the stone without breaking either the bone or the teeth.

Taking into consideration the various points of structure so far as known, it will be noticed that not only does the form present features which distinguish it from any known genus, but that in it we have a combination of characters which render it difficult to be certain whether it belongs to the *Macropodidae* or to the *Phalangeridae*. As regards the structure of the jaw, the affinities on the whole are with the latter, and as regards the teeth apparently with the former. The absence of any opening between the dental canal and the hollow on the outer side of the hinder part of the jaw would seem to remove the form from the *Macropodidae* and point to its connection with the Phalangers. But this point cannot be of any great value, as though the opening is generally absent in the *Phalangeridae* it is present in the genus *Petaurus*. The large grooved premolars, though much better developed proportionally, appear to be constructed on the same type as those of *Epyprymnus* (*Hypsiprymnus*) and a type quite distinct from that of the Phalangers. In *Trichosurus* where there are rudimentary indications of grooves it is on the hinder part of the tooth, the anterior part being developed into a powerful smooth cusp. The molars present a somewhat archaic type. There is no indication of ridging as in most of the existing types, nor is there the simple regularity of cusps found in *Petaurus*. In the little accessory tubercles we seem to have a feature suggestive of the multi-tubercular molars of the Secondary Marsupials. The minute premolars certainly recall the similar rudimentary teeth in *Pseudochirus*, *Petaurus*, &c., but similar rudimentary teeth must also have been present in the primitive *Macropodidae*.

On the whole it would seem that we have in *Burramys* one more link in the chain binding the Kangaroos and the Phalangers. The main links would thus be—*Macropus*, *Epyprymnus*, *Hypsi-prymnodon*, *Burramys*.

The types have been placed in the Australian Museum, Sydney.

REFERENCES TO FIGURES.

Plate XLV.

Burramys parvus.

- Fig. 1.—Outer view of lower jaw ($\times 10$).
 Fig. 2.—Upper view of anterior part of right lower jaw ($\times 10$).
 Fig. 3.—Upper view of lower right cheek teeth ($\times 13$).

Plate XXV.

- Fig. 1.—Inner view of left mandible ($\times 5$).
 Outline of jaw from another specimen.
 Fig. 2.—Portion of left upper jaw showing the large premolar and the origin of the zygomatic arch ($\times 13$). (The front part of the maxillary and the zygomatic arch are considerably foreshortened.)
 Fig. 3.—Right upper cheek teeth ($\times 13$). (The premolar is broken off near the base, and only the roots of the third molar are shown; judging from the lower teeth the roots of m^3 have evidently been slightly displaced outwards.)